UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

AUG - 5 2008

MEMORANDUM

SUBJECT: Request for a Time-Critical Removal Action at the Anaconda Yerington Mine Site, Yerington, Lyon County, Nevada

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THROUGH: Daniel Meer, Chief (SFD-9) JK for DM
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I. PURPOSE

The purpose of this memorandum is to request and document approval for a response action that incur direct extramural costs of ~~up to $1,741,395 of which up to~~ $1,275,000 would come from an established special account for the Anaconda Copper Mine Superfund Site (the "Site").

The proposed response action would mitigate threats to human health and the environment posed by the presence of heavy metals and corrosive liquids at the Site, near the City of Yerington, County of Lyon, Nevada. This response action proposed in this memorandum would address the management of certain heap leach fluid ponds and drains that pose a substantial threat to the public health and welfare and the environment, particularly providing closure and/or repairs to Slot Pond #1, the Plant Feed Pond, Phase I/II Pond, Old Raffinate Pond, New Raffinate Pond, Mega Pond, the VLT Pond and portions of the heap leach perimeter drain system. EPA has addressed other leach fluid ponds in previous removal actions, but the ponds to be addressed in this proposed response (with the exception of the Mega Pond) have not been previously addressed. In addition, EPA will evaluate, and to the extent practicable, implement measures at the remaining heap leach and evaporation ponds aimed at deterring birds from accessing these ponds.

Conditions presently exist at the Site that, if not addressed by implementing the

response action documented in this memorandum, may lead to continued off-Site migration and the release of contaminants, primarily low pH (extremely acidic) liquids and metals such as aluminum, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, magnesium, manganese, nickel, selenium, nickel, vanadium, and zinc. Other hazardous substances that would be subject to the proposed response action include radio-nuclides such as uranium, radium and thorium. As discussed in this memorandum, all of these hazardous substances, if unaddressed, may pose an imminent and substantial endangerment to the public health or welfare or the environment.

The proposed response to the hazardous substances includes initial removal activities pursuant to Section 104(a) of the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA"), 42 U.S.C. § 9604(a), and Section 300.415 of the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"), 40 C.F.R. § 300.415. The initial response action incorporates Site investigation activities also authorized by Section 104(a) of CERCLA, 42 U.S.C. § 9604(a).

Previous removal actions at the Site were authorized by the following Action Memoranda:

- September 28, 2007- Addressed closure of the Bathtub Pond and construction of an associated interceptor trench;
- August 10, 2006- Addressed repairs to Slot Pond #2, construction of the Mega Pond interceptor trench and construction of a large Evaporation Pond;
- December 7, 2005 - Addressed removal of PCB-containing transformers and fugitive dust.

II. SITE CONDITIONS AND BACKGROUND

Site Status: Non-NPL
Category of Removal: Emergency/Time-Critical
CERCLIS ID: NVD083917252
SITE ID: SSID#09GU (OU8)

A. Site Description

1. Physical location

The Site is located approximately two miles west of Yerington, Nevada, directly off of Highway 95, at 102 Burch Drive. The Site includes portions of Township 13N, Range 25E, Sections 4, 5, 8, 9, 16, 17, 20, and 21 (Mount Diablo Baseline and Meridian) on the Mason Valley and Yerington USGS 7.5 minute quadrangles. The geographic coordinates are 38° 59' 53.06" North latitude and 119° 11' 57.46" West

longitude. The Site occupies 3,468.50 acres of disturbed land in a rural area, bordered to the north by open agricultural fields and residential acreage, and to the east by Highway 95A, which separates the Site from the city of Yerington. Approximately fifty percent of the Site is privately owned land, and the rest is land within the jurisdiction, custody and control of the United States Department of the Interior, Bureau of Land Management ("BLM"). To the south continues federal range land, and to the west and southwest the federally owned Singatse mountains. The community of Weed Heights is located on the western edge of the Yerington Pit.

2. Site characteristics

Facilities associated with copper mining operations at the Site include an open-pit mine, mill buildings, tailing piles, waste fluid ponds, and the adjacent residential settlement known as Weed Heights. A network of leach vats, heap leaching pads and evaporation ponds remain throughout the Site, in addition to a lead working shop, a welding shop, a maintenance shop, two warehouses, an electro-winning plant, and an office building.

The Site began operation in or about 1918, originally known as the Empire Nevada Mine. In 1953, Anaconda Minerals Company ("Anaconda") acquired and began operating the Site. In or about 1977, Atlantic Richfield Company ("Atlantic Richfield") acquired Anaconda and assumed its operations at the Site. In June 1978, Atlantic Richfield terminated operations at the Site. In or about 1982, Atlantic Richfield sold its interests in the private lands within the Site to Don Tibbals, a local resident, who subsequently sold his interests with the exception of the Weed Heights community to Arimetco, Inc. ("Arimetco"), the current owner. From 1989 to November 1999, Arimetco operated a copper recovery operation from existing leach heaps within the Site and ore from the McArthur Pit. Arimetco has terminated operations at the Site and is currently managed under the protection of the United States Bankruptcy Court in Tucson, Arizona. The presently approved bankruptcy plan anticipates a liquidation of Arimetco's operations at the Site.

During the 25-year operational period that Anaconda and Atlantic Richfield operated the Site, they removed approximately 360 million tons of ore and debris from the open pit mine, much of which now remains in tailings or leach heap piles. Anaconda and Atlantic Richfield extracted copper from the mine by two separate methods for processing copper ore, depending on the ore type. The mined ore contained copper oxides in the upper portion of the open pit and copper sulfides in a lower portion of the open pit. During on-Site milling operations, a copper precipitate was produced from the oxide ore and a copper concentrate was produced from the sulfide ore. By one processing method, the operator would lay the copper oxide ore in leaching vats and leach out copper with sulfuric acid. The resulting tailings are referred to as "vat leach tailings." The copper precipitated out after passing over iron scraps. For 10 years starting in 1965, Anaconda and Atlantic Richfield also used a second process for the

oxide ore, in which they spread dilute sulfuric acid over the top of low grade oxide ore piles, specifically the W-3 dump area, thereby leaching out the copper. They collected the resulting acidic solution containing copper and added it to the copper solutions precipitated after passing over iron scraps. The operator would process the copper sulfide ore by crushing it and concentrating it by flotation. The operator then added lime (calcium oxide) to maintain an alkaline pH, and shipped the resulting copper concentrate off-Site for final processing. In addition, Anaconda produced its own sulfuric acid at the rate of over 400 tons per day.

Arimetco used a different processing method from the Anaconda methods to extract copper from copper oxide ore. The operator leached the ore successively with a mild acid solution and kerosene in three process vats (approximately 200,000 gallons). The heaps were leached with a dilute sulfuric acid solution. The copper laden acid solution was then stripped of copper in a solvent extraction circuit that was comprised of a mixture of kerosene and an organic reagent. In the solvent extraction circuit the copper was then concentrated in a strong acid that became the electrolyte for the electrowinning circuit. In the electrowinning circuit, the copper was electroplated to stainless steel sheets to produce 99.999 fine copper. The operator recirculated the acid solution from the electro-winning vats back into the leach heaps. The solution that was recirculated to the heaps was the original pregnant solution that came from the heaps and was stripped in the solvent extraction circuit. The electrolyte circulated between the electrowinning plant and the tail end of the solvent extraction plant. The kerosene and organic reagent also were recirculated within the solvent extraction system, being loaded and stripped over and over. There were losses to the system and some kerosene escaped to the heaps. Arimetco constructed six heap leach pads and several associated collection ponds and piping systems. The leach heaps remain on-Site and continue to precipitate acidic fluids into several fluid management ponds.

3. Site evaluation

In the mid-1980s and early 1990s, Atlantic Richfield installed eleven groundwater extraction wells on the northern end of Site. The purpose of the system was to prevent the contamination of private drinking water wells north of the Site from the shallow groundwater underlying the Site, and to stop contamination from reaching the Walker River via the Wabuska Drain. In 1999, at the request of the Yerington Paiute Tribe, EPA began an evaluation of the Site to determine the effectiveness of the existing pump-back system in preventing off-Site migration of contaminated groundwater and to determine whether any domestic wells had been impacted by the Site. EPA collected groundwater samples from on-Site monitoring wells, from the Wabuska Drain, and from nearby residential and community wells, including the wells of the Yerington Paiute Tribe. In November 1999, the Nevada Division of Environmental Protection ("NDEP") collected additional samples to provide data to support model scoring under the Hazard Ranking System for ground water and surface water migration pathways. Analyses of samples from the monitoring wells indicated concentrations of arsenic at 50 to 100 parts per

billion ("ppb"), cadmium at 8 to 20 ppb, iron up to 1,400,000 ppb, mercury at 0.4 to 0.7 ppb, and nickel at 100 to 1200 ppb. In addition, samples from a shallow groundwater monitoring well located less than a quarter mile from the Site contained concentrations of arsenic at 60 ppb, copper at 30 ppb, and iron at 4,300 ppb. Drinking water maximum contaminant levels by comparison are as follows: arsenic is 10 ppb; cadmium is 5 ppb; copper is 1,300 ppb; iron is 600 ppb; mercury is 2 ppb; and nickel is 100 ppb.

Analyses of samples from domestic and agricultural water wells indicated that concentrations of salinity and, in some instances iron (up to 400 ppb), were high. Arsenic concentrations in most production wells were below or at the detection limit of 20 ppb, except at four residential wells near the northwest corner of the Site on Luzier and Locust Lanes, which respectively exhibited arsenic concentrations of 40 and 60 ppb.

Results of surface water analyses indicated elevated concentrations of copper at 5,400 ppb, iron at 51,000 ppb, lead at 500 ppb, manganese at 37,000 ppb, and sulfate at 4,348,000 ppb immediately down gradient of the Site in the Wabuska Drain. These concentrations diminished with distance from the Site along the length of the drain.

In October 2000, EPA conducted an Expanded Site Inspection at the Site, which consisted of collecting ground water samples from six monitoring wells on and around the Site, and samples of standing water from a below ground cellar, pregnant leachate solution, tailings and leachate salts. These samples again confirmed high concentrations of contaminants (Ecology and Environment, Expanded Site Investigation, 12/14/2000, Table 3-1), including beryllium, cadmium, chromium, lead, mercury, and selenium. The groundwater monitoring well samples revealed levels above the regulatory limits for drinking water for arsenic, beryllium, cadmium, chromium, lead, and selenium. EPA concluded from this study that toxic heavy metals exist in source materials at the Site and have contaminated groundwater. The local groundwater is the sole source of drinking water for approximately 3,000 people living within four miles of the Site.

In November 2001, EPA obtained and analyzed surface and subsurface soil samples within the Site and from off-Site areas that might have been affected by the Site (specifically the Yerington Paiute Colony). Sampling within the Yerington Paiute Colony revealed arsenic levels above the Region 9 residential preliminary remediation goals, but similar to identified background levels.

Starting in September 2002, Atlantic Richfield conducted response activities at the Site pursuant to a consent agreement with NDEP, which was superseded by a unilateral administrative order from EPA in March 2005. As part of this work, beginning December 2003, Atlantic Richfield sampled domestic wells north of the Site and found that fifty-seven wells have gross alpha radiation levels of up to seven times the regulatory limit (78.4 pCi/l) and thirty-four of those wells had uranium levels of up to four times the regulatory limit (101 ug/L). Atlantic Richfield has voluntarily provided bottled water to

residents whose wells exceed the regulatory limits, and is currently providing bottled water to sixty households north of the mine.

From June through December 2004, BLM conducted a surface radiological survey of the process areas of the Site and certain other portions of the Site, and soil sampling from areas of elevated radiation. The samples indicated levels of radium 226 of 9,300 pCi/gm, approximately twenty-five hundred times EPA's industrial preliminary remediation goal ("PRG") of 3.7 pCi/gm, and radium 228 at 78 pCi/gm which is fourteen times the PRG of 6 pCi/gm. This survey identified areas with elevated levels exceeding PRGs for uranium and thorium radioisotopes and exposure rates as high as 5 milliREM per hour (more than two times EPA's guidance level for unrestricted access). The identified occurrence of the radiological contaminants at greater than background levels indicates that process solutions, copper ore, and potentially waste rock throughout the Site could contain disturbed or "technologically enhanced" naturally occurring radioactive materials, which may have migrated from the Site through saturated sediment, sludges, crushed and uncrushed rock, fugitive dust and precipitated solutions and may have impacted surface water and groundwater.

From February to May 2006, EPA conducted an initial removal action at the Site. This removal action consisted of two phases of work. The first phase involved the assessment and removal of PCB-containing transformers and switches. Over 170 transformers were sampled, and 119-PCB containing transformers were shipped off-Site for disposal. The second phase of the removal action involved the capping and sealing of areas of the Site contributing to off-Site dust migration. This included placing a soil cap over approximately 75-100 acres of exposed sulfides tailings, and applying a soil sealant to other areas believed to be contributing to the dust problem.

From August to October 2006, EPA conducted a removal action to address fluids management issues associated with the heap leach system. This removal action included relining the Slot Pond, construction of a Megapond Interceptor Trench, and construction of a new Evaporation Pond. The United States Fish and Wildlife Service had reported a dead bird near some standing fluid on the sulfide tailings, and others elsewhere on the Site. Because the bird death could potentially have resulted from the ingestion of the standing fluid, which appeared to be precipitation and dissolved sulfide tailing residues, in April 2006, EPA obtained and analyzed fluid samples from five areas of standing fluids on the north end of the Site. The sampling covered the three pump back containment ponds, areas of standing water in the asphalt lined evaporation ponds, and the Arimetco pregnant solution collection ditch adjacent to the Vat Leach Heap Leach Pad. Analytical results indicate that standing fluids have very low pH levels, and elevated uranium and metals as follows: (1) the pump back ponds exhibit low pH ranging from 2.6 to 4.0, with uranium concentrations from 850 to 2,100 ug/l and elevated metals up to 10X or greater than those seen in the extraction wells supplying the ponds; (2) an area of standing water, exhibited a pH of 0.29, uranium at 27,000 ug/l and elevated metals up to 4X higher than seen in EPA's October 2000 sampling of similar

standing fluid in a below ground cellar; and (3) the Arimetco solution exhibited a pH of 2.7, uranium at 8,900 ug/l and elevated metals at approximately the same magnitude as seen in EPA's October 2000 sampling of similar pregnant solutions. Fluids with such low pH and elevated metals potentially pose acute toxicity to wildlife. In addition, the elevated uranium concentrations will need to be assessed and remedied as appropriate.

In August and November 2007, EPA ERS conducted two additional removal assessments at the Site. One assessment focused on evaluating radiological contamination of the "Process Area" of the Site. It is expected that the results of the Process Area radiological assessment will be used to guide a future removal action in that area. The second removal assessment performed in August 2007 consisted of sub-surface sampling and analysis beneath the fluids management ponds. A Geoprobe direct push rig was used to collect core samples beneath each of fluids management ponds. The depth of sampling ranged up to 30 feet below ground surface. The results of the sub-surface ponds assessment support closure of the ponds in place (once the sediment and liner have been removed), with the exception of the Old Raffinate Pond. Kerosene-contaminated soils were detected beneath the Old Raffinate pond to a depth of 23 feet below ground surface.

From October to November 2007, EPA conducted a removal action to address fluids management issues associated with the Bathtub Pond. This removal action included removal of sediments and liner from the pond, backfilling and grading the pond and construction of an interceptor trench along the shoulder of the pond.

During the fall of 2007, EPA collected another eight fluid samples, with either one or two samples obtained from each of the six Arimetco leach heap ponds/ditches. These data generally show a pH consistent with what is specified above (ranged from 1.9 to 2.8) and specific conductance ranging from 31,000 to 45,000 µmhos per centimeter (µmhos/cm). Metals that exceed primary or secondary drinking water maximum contaminant levels (MCLs) include aluminum, antimony, arsenic, beryllium, boron, cadmium, chromium, copper, iron, lead, manganese, mercury, thallium and zinc. Radiological data are currently under review but generally exceed the MCLs for thorium isotopes 228, 230, and 232; uranium isotopes 234, 235, and 238; and gross alpha particles. TPH values range from 750 to 2,100 µg/L, which exceeds Nevada cleanup requirements of 1,000 µg/L.

During the Spring of 2008, additional bird casualties were reported in the heap leach fluid ponds at the Site. USFWS had encountered a total of seven during February, four during March (two of these were sacrificed by USFWS for testing), and one in April at various locations near the evaporation ponds around the site.

4. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant

EPA confirmed that over 3,000 acres of tailings with a potentially high concentration of metals remain at the Site, and that the abandoned process fluids emanating from the tailings have a low pH and contain excessive quantities of arsenic, cadmium, chromium, copper, and iron. Salts precipitating from these fluids contain even higher concentrations of such metals. Also present are radionuclides, including uranium, thorium, and radium. Exposure to the tailings fluids and salts may occur to workers at the Site, trespassers and, as demonstrated by the dead birds, wildlife. The deteriorated conditions of the ponds subject to the response action proposed in this memorandum will lead to a release of these hazardous substances into the environment with the additional volume of winter precipitation.

5. National Priorities List ("NPL") status

The Site is not currently on the NPL; however EPA requested the State's position for listing on December 19, 2000. On January 25, 2001, the Governor of Nevada objected to the listing and requested that EPA defer listing. From that time until December 10, 2004, EPA, NDEP and BLM jointly managed the Site under a memorandum of understanding, dated March 28, 2002, which designated NDEP as the functional lead agency. On October 29, 2002, NDEP entered into an enforcement agreement with Atlantic Richfield. Over the following four years, Atlantic Richfield implemented some investigations and interim measures, and resulting data collection revealed a high degree of technical complexity at the Site, including the discovery of radioactive concerns. Because of this increased complexity, on December 10, 2004, NDEP requested that EPA assume the regulatory lead role at the Site under CERCLA. On December 20, 2004, EPA formally agreed to assume the lead role using its authority under CERCLA. At that time, EPA stated that it did not presently intend to list the Site on the NPL, but did reserve the option to consider listing the Site if it becomes necessary in order to achieve cleanup. On March 31, 2005, EPA issued a Unilateral Administrative Order to Atlantic Richfield to conduct many interim stabilization and response measures. This order, however, is limited to response actions that are a result of contamination created or exacerbated by the activities of Atlantic Richfield or its predecessor in interest, Anaconda Mining, or to continue those immediately necessary response actions that Atlantic Richfield initiated under the oversight of the NDEP. On January 12, 2007, EPA issued a second Unilateral Administrative Order to Atlantic Richfield Company to conduct Site-wide remedial investigation/feasibility studies.

B. <u>Other Actions to Date</u>

1. Potentially Responsible Party Actions

Currently, response activities are being performed by Norwest Applied Hydrology or Brown and Caldwell under contract to Atlantic Richfield. These activities are a continuation of response actions, initiating remedial investigation activities, monitoring, data collection and maintenance activities specifically required under: (1) the 1985 NDEP Administrative Order to Anaconda Minerals Company; (2) the March 28, 2002 Memorandum of Understanding between NDEP, EPA and BLM and the associated Scope of Work; (3) the October 24, 2002 Administrative Order on Consent between NDEP and Atlantic Richfield Company; (4) the March 31, 2004 Unilateral Administrative Order from EPA, and (5) the January 12, 2007 Unilateral Administrative Order from EPA. None of these actions require Atlantic Richfield to maintain the integrity of the Arimetco fluid system.

2. EPA Actions

EPA is completing a remedial investigation of the Arimetco Heap Leach Pads. The present results of this remedial investigation are stated in the document entitled "Draft Remedial Investigation Report, Arimetco Facilities Operable Unit 8", dated June 2008. In addition, EPA has conducted several removal assessments and three previous removal actions. These removal assessments and removal actions were described previously in the Removal Evaluation section of this memorandum.

C. State and Local Authorities' Roles

1. State and local actions to date

Arimetco, which operated heap leach facilities at the Site from 1989 to 2000, was issued a Finding of Alleged Violation and Order by NDEP on September 23, 2002, as a result of Arimetco's abandonment of Electro-winning fluids and drummed material after Arimetco sought bankruptcy and abandoned the Site. On October 23, 2002, NDEP issued a notice of Arimetco's failure to comply with the Order and subsequently, through NDEP's contractor, SRK Consultants, took over response actions at the Site. NDEP's response actions began in January 2003 and concluded in July 2003. Approximate quantities removed were as follows:

Electrolyte	~ 233,000 gallons
Organic fluids	~ 19,000 gallons
Waste Oils	~ 4,500 gallons
Copper Sulfate	~ 72 cubic yards
Crushed Drums	~ 40 cubic yards
Non-haz small SX plant material	~ 16,000 gallons
Non-regulated liquid waste	~ 18,000 gallons
Non-regulated solid waste	~ 200 cubic yards

Hazardous Waste (lead)	~ 70 cubic yards
Hazardous Waste (other)	~ 1,800 pounds

The project was funded by the state of Nevada, which was reimbursed by Atlantic Richfield.

In October 2002, NDEP took responsibility for the Arimetco heap leach fluid management activities to prevent the overflow of fluids from the heaps. EPA's March 31, 2005 Unilateral Administrative Order directed Atlantic Richfield to maintain those activities, but did not specifically require Atlantic Richfield to prevent discharges to ground water from the Arimetco system.

2. Potential for continued state/local response

Neither state nor local agencies have committed the resources to either continue the Arimetco heap leach water management activities and related costs, or to undertake the required clean-up action at this time. As stated above, NDEP formally requested that EPA assume the lead role for the Site because the Site conditions became too complex.

Regardless, EPA may request that other state and local response organizations assist and coordinate within the response for necessary tasks within their respective domains, such as traffic planning, community relations, and logistical support. EPA recognizes, however, that their financial ability to contribute more to the response will be limited.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Conditions at the Site represent a release, and potential threat of release, of CERCLA hazardous substances threatening the public health, or welfare, or the environment based on the factors set forth in the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"), 40 C.F.R. § 300.415(b)(2). These factors include:

A. Actual or potential exposure to nearby populations, animals or the food chain from hazardous substances or pollutants or contaminants

Although EPA has previously taken action to address releases of hazardous substances from the fluids management system, this system has continued to degrade and ongoing releases are presently occurring. The liners of several of the remaining ponds have been severely damaged by wind to the point where these liners no longer contain the fluids. These ponds include Slot Pond #1, the Plant Feed Pond, Phase I/II Pond, Old Raffinate Pond, New Raffinate Pond, and the Megapond. In addition, the VLT pond and several areas of the perimeter ditches are in need of repair. Due to the

deteriorated condition of these liners, releases of hazardous substances are currently ongoing. These releases will increase significantly with increased precipitation during the winter months if no action is taken. Releases of acidic and metals-contaminated liquids from the ponds could potentially impact drinking water supplies and the irrigation of crops grown adjacent to the Site.

B. Actual or potential contamination of drinking water supplies

Although EPA has previously taken action to address releases of hazardous substances from the fluids management system, this system has continued to degrade and ongoing releases are presently occurring. Liners at several of the ponds are no longer intact and releases of hazardous substances are currently ongoing. These releases will increase significantly with increased precipitation during the winter months if no action is taken. Releases of acidic and metals-contaminated liquids from the ponds could potentially impact drinking water supplies and irrigation of crops grown adjacent to the Site.

C. High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate

The threat of migration for hazardous substances from these ponds, as considered in this memorandum, is primarily a discharge to groundwater through the deteriorated liners. Threats from surface soils are not the subject of this memorandum.

D. Weather conditions may cause hazardous substances or pollutants or contaminants to migrate or be released

The Site is located in an area of Nevada that receives significant precipitation in the winter. In addition, this area is characterized by extremely variable winds with high velocities throughout much of the year. There are numerous solution storage ponds at the Site. These ponds are associated with the heap leach pads or the electro-winning facility, and contain low pH liquids and have high concentrations of metals.

Temperature extremes and high wind events have contributed to failure of the pond liners. During the winter months, increased precipitation causes the liquid level to rise within these ponds. Rising liquid levels will provide additional hydraulic head to facilitate migration of hazardous substances through the compromised liners. Further exposure of the liners to wind, sun and rain causes more deterioration, and thereby exacerbates the threat of release. As a result, a release of hazardous substances is currently ongoing, and will get worse with additional time.

E. Threat of fire or explosion

The threat of migration for hazardous substances from these ponds, as

considered in this memorandum, is primarily a discharge to groundwater through the deteriorated liners. Threats at the Site from fire or explosion are not the subject of this memorandum.

F. Availability of other appropriate federal or state response mechanisms to respond to the release

No other appropriate federal, local or state public funding source has been identified. The proposed action exceeds the financial capability of the State Emergency Reserve Account.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

The fluids management system, including the heaps, liners, solution ditches, ponds, pumps and associated piping, are currently in a state of disrepair, allowing hazardous substances to discharge into the subsurface and the groundwater. Increased winter precipitation will exacerbate the discharge through deteriorating liners.

A. Proposed Actions

1. Proposed action description

EPA will conduct the following activities, as part of this removal action:

Slot Pond #1. Contaminated sediments will be removed from this pond and placed on top of the adjacent Heap Leach Pad. The liner will be removed from the pond and placed in the onsite construction debris landfill

Plant Feed Pond. Contaminated sediments will be removed from this pond and placed on top of the adjacent Heap Leach Pad. The liner will be removed from the pond and placed in the onsite construction debris landfill. The area of the pond will be regraded,

New Raffinate Pond. Contaminated sediments will be removed from this pond and placed on top of the adjacent Heap Leach Pad. The liner will be removed from the pond and placed in the on-Site construction debris landfill. The area of the pond will be regraded,

Old Raffinate Pond. Contaminated sediments will be removed from this pond and placed on top of the adjacent Heap Leach Pad. The liner will be removed from the pond and placed in the onsite construction debris landfill. Kerosene-contaminated soils have been identified beneath this pond. The kerosene-contaminated soils will be excavated and either treated onsite or shipped offsite to an appropriate disposal facility.

Phase I/II Pond. Contaminated sediments will be removed from this pond and adjacent sediment pond and placed on top of the adjacent Heap Leach Pad. The liner will be removed from the Phase I/II pond and sediment pond and placed in the onsite construction debris landfill. The Phase I/II Pond and the adjacent sediment pond will be reconstructed, in order to continue to capture heap leach fluids. These fluids will be transferred to the Evaporation Pond via an existing pipeline.

Megapond. Contaminated sediments will be removed from this pond and placed on top of the adjacent Heap Leach Pad. The liner will be removed from the pond and placed in the on-Site construction debris landfill. The area of the pond may be regraded, at the discretion of the OSC.

VLT pond. This pond still captures heap leach fluids from the VLT heap. The liner is sagging in numerous areas, and small tears have been identified. This liner will be repaired.

Perimeter drains. Numerous tears have been identified in the perimeter drains which encircle the heap leach pads. To the extent practicable, the torn areas of the drains will be repaired and steps will be taken to limit future sun and wind damage to the perimeter drain liners, including covering damage portions of the perimeter drains with crushed gravel.

Ecological Mitigation. USFWS has identified several dead birds in the vicinity of the heap leach ponds. USFWS attributes the bird mortality to the low pH fluids in these ponds. Closure of the above-mentioned ponds should help to limit the threat to wildlife posed by the heap leach ponds. EPA will evaluate, and to the extent practicable, implement measures at the remaining heap leach and evaporation ponds aimed at deterring birds from accessing these ponds.

2. Contribution to remedial performance

Long term remedial action at this Site is anticipated. The response actions considered in this memorandum will remove the need for future action at these ponds in the course of more comprehensive remedial work at the Site.

The long-term cleanup plan for the Site:

The work performed under this removal action is intended to be consistent with long-term clean-up plans for the Site. Final reporting of this removal action will be provided for consideration in any further cleanup activities. The response actions proposed in this memorandum will mitigate interim discharges of heap solutions to groundwater. Nonetheless, EPA is working to identify a long term solution to the continuing drain down from the leach heaps.

Threats that will require attention prior to the start of a long-term cleanup:

This removal action does not constitute a final remedy for the fluids management at the Site. Until closure of the heap leach pads is complete, there will be a need to collect and address fluids that drain down from the heaps. Implementation of this action, like the previous fluids management actions taken, will improve long-term fluids management issues at the Site. There will still be a need for ongoing pumping operations between ponds; however this pumping requirement should be significantly less than is currently required. EPA expects that Atlantic Richfield or any future owner of the Site will continue to operate the fluids management system. In the event that Atlantic Richfield or a future owner ceases to perform long-term operation and maintenance of the fluids management system, then another responsible party or agency will have to perform the work.

The extent to which the removal will ensure that threats are adequately abated:

By conducting the pond closures and repairs described above, this removal action will reduce the ongoing release of hazardous substances.

Consistency with the long-term remedy:

This removal action should be consistent with the long-term remedy for the Site. Although the long-term remedy has not yet been determined, any likely remediation of the heaps will require continued collection of heap leach fluids.

EPA has begun planning for the provision of post-removal Site control, consistent with the provisions of § 300.415(k) of the NCP. Any future owner likely will have obligations to protect the integrity of completed removal actions and thereby provide post-removal Site controls. The nature of the removal proposed in this memorandum is, however, expected to minimize the need for post-removal Site activities beyond the remedial investigation and feasibility studies phase, and remedy selection and implementation as appropriate.

3. Description of alternative technologies

Alternative technologies are not appropriate for this removal action.

4. Applicable or relevant and appropriate requirements (ARARs)

Section 300.415(j) of the NCP provides that removal actions must attain ARARs to the extent practicable, considering the exigencies of the situation.

Section 300.5 of the NCP defines applicable requirements as cleanup standards, standards of control, and other substantive environmental protection requirements, criteria or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location or other circumstances at a CERCLA site.

Section 300.5 of the NCP defines relevant and appropriate requirements as cleanup standards, standards of control and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, or contaminant, remedial action, location, or other circumstances at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site and are well-suited to the particular Site.

Because CERCLA on-site response actions do not require permitting, only substantive requirements are considered as possible ARARs. Administrative requirements such as approval of, or consultation with administrative bodies, issuance of permits, documentation, reporting, record keeping and enforcement are not ARARs for the CERCLA response actions confined to the Site.

The following ARARs have been identified for the proposed response action. All can be attained.

Federal ARARs: Potential federal ARARs may include the RCRA Land Disposal Restrictions, 40 C.F.R. § 268.40 Subpart D; the CERCLA Off-Site Disposal Restrictions, 40 C.F.R. § 300.440; the Clean Water Act Pre-treatment Standards for New Sources, 40 C.F.R. Part 433.17, TSCA, and the U.S. Department of Transportation of Hazardous Materials Regulations, 49 C.F.R. Part 171, 172 and 173.

State ARARs: Nevada Administrative Code, Chapter 444 applies to Class III industrial landfills, such as proposed for on-Site disposal of construction debris. EPA would consider any relevant requirements in the actual design and construction of any construction debris landfill.

5. Project schedule

The removal action is anticipated to start after the approval of the action as indicated by the signature on this memorandum. The bulk of the removal activities will require approximately three months to complete. However, in the event that onsite

treatment of kerosene-contaminated soils is conducted, this particular activity could take up to a year to complete.

B. Estimated Costs

Cost estimates are based on existing Emergency and Rapid Remedial Response Services (ERRS) rates for the EPA Region 9 contracts.

Extramural Costs

Regional Removal Allowance Costs

Cleanup Contractor (ERRS)	$ 1,000,000
Extramural Subtotal	$ 1,000,000
Extramural Contingency (20%)	$ 200,000
TOTAL, Removal Action Project Ceiling	$ 1,200,000
START Contract Costs	$ 75,000
TOTAL, Extramural Costs	$ 1,275,000

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Given the Site conditions, the nature of the hazardous substances documented on-Site and the potential exposure pathways to nearby populations described in Sections III and IV above, actual or threatened releases of hazardous substances from the Site, if not addressed by implementing the response actions selected in this Action Memorandum, present an imminent and substantial endangerment to public health, or welfare, or the environment. If no action is taken, low pH and metal-bearing fluids present in the ponds will remain available to contact with workers and trespassers within the Site, and well as with wildlife. Additionally, the fluids will continue to release to the subsurface, which will likely contribute to groundwater contamination.

VII. OUTSTANDING POLICY ISSUES

Much of the land subject to the proposed removal action is on federal land within the jurisdiction, custody and control of the BLM. Pursuant to Executive Order 12580(g), EPA maintains delegated authority to conduct response actions in accordance with Section 104(a) of CERCLA, including for emergency actions on federal land within the jurisdiction, custody and control of another federal agency. BLM also is delegated authority to conduct non-emergency response actions on federal land within its jurisdiction, custody and control, where the site is not on the NPL. Because this time-critical removal action is intended to address the emergency conditions caused by acute

toxicity of the leachate fluids and the deteriorating liners, and where the source of the fluid management system originates from the heaps on private lands, EPA is within its delegated authority to conduct the action. Nonetheless, EPA is coordinating the anticipated response action with BLM.

VIII. ENFORCEMENT

Please see the attached Confidential Enforcement Addendum for a discussion regarding potentially responsible parties and enforcement. In addition to any extramural costs estimated for the proposed action, a cost recovery enforcement action also may recover the following intramural costs:

Intramural Costs[1]

U.S. EPA Direct Costs	
Intramural	$ 75,000
Extramural	$1,275,000
U.S. EPA Indirect Costs	
(36.58% of $1,275,000)	$ 466,395
TOTAL Costs	$ 1,741,395

The total EPA extramural and intramural costs for this removal action, based on full-cost accounting practices, that will be eligible for cost recovery, are estimated to be $1,741,395.

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1. Direct costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual costs from this estimate will affect the United States' right to cost recovery.

IX. RECOMMENDATION

This memorandum proposes removal action for addressing certain fluids management issues at the Anaconda Yerington Mine Site, Yerington, Lyon County, Nevada, as developed in accordance with CERCLA and not inconsistent with the NCP. This decision is based on the Administrative Record for the Site. Because conditions at the Site meet the NCP criteria for a time-critical removal, I recommend that you concur on the determination of imminent and substantial endangerment, the proposed removal action and the anticipated intramural and extramural direct costs of $1,741,395, of which up to $1,275,000 would come from an established special account for the Anaconda Copper Mine Superfund Site (the "Site"). Your approval below will establish as agency action the determination of the imminent and substantial endangerment and the selection of the response action.

Approve: _____ 8/5/08

Michael Montgomery, Chief
Federal Facilities and Site Cleanup Branch Date

Disapprove: _____ _____

Michael Montgomery, Chief
Federal Facilities and Site Cleanup Branch Date

Attachments

Index to the Administrative Record
Confidential Enforcement Addendum

Appendices

1. Site Plan "Figure 1 "

cc: Director, Nevada Department of Environmental Protection
Bob Kelso, Department of the Interior, Bureau of Land Management
Damian Higgins, Department of the Interior, Fish and Wildlife Service
Roy Thun, ARC
S. Fielding, USEPA, OEM

bcc: Site File
A. Helmlinger, ORC-3
T. Dunkelman, SFD-9-2
D. Seter, SFD-8-2
N. Hollan Burke, SFD-8-2
B. Lee, SFD-9-4
Steffanie Wood, PMD-8
C. Temple, SFD-9-4

AMINISTRATIVE RECORD INDEX

Doc_date	Author	Addressee	Title_subject	Docid
3/31/2005	Environmental Protection Agency - Region 9	-	Unilateral administrative order #9-2005-0011 for initial response activities	2077062
12/2/2005	Tom Dunkelman / Environmental Protection Agency - Region 9	Kathleen Johnson / Environmental Protection Agency - Region 9	(Privileged, FOIA exs 5 & 7) Action Memo: Request for time-critical removal action at site (enforcement confidential addendum only) (Privileged document target only)	2085758
12/2/2005	James Sickles / Environmental Protection Agency - Region 9 Tom Dunkelman / Environmental Protection Agency - Region 9	Kathleen Johnson / Environmental Protection Agency - Region 9	Action Memo: Request for a time-critical removal action at site, w/o enforcement confidential addendum	2133414
4/1/2006	Ecology & Environment, Inc	Environmental Protection Agency - Region 9	Transformer removal final rpt w/appendices A-D	2133418
8/1/2006	U R S Corp	Environmental Protection Agency - Region 9	Anaconda Mine pond improvements - construction QAPP	2114019
8/1/2006	U R S Corp	Environmental Protection Agency - Region 9	Pond improvements, technical specifications	2133420
8/4/2006	Cris Castro / U R S Corp Steve Nelson / U R S Corp	Environmental Protection Agency - Region 9	Pond improvements, engineer's cost estimate	2133413
8/10/2006	Tom Dunkelman / Environmental Protection Agency - Region 9	Keith Takata / Environmental Protection Agency - Region 9	(Privileged, FOIA ex 7) Memo: Request for an exemption from $2,000,000 statutory limit & request for time-critical removal action (enforcement addendum only) (Privileged document target only)	2133434
8/10/2006	Tom Dunkelman / Environmental Protection Agency - Region 9	Keith Takata / Environmental Protection Agency - Region 9	Action Memo: Request for exemption fr $2,000,000 statutory limit & request for time-critical removal action w/o enforcement addendum	2133432
9/6/2006	Team 9	Environmental Protection Agency - Region 9	Oversize Drawings (28): Pond improvements as-built, 11 x 17 in, scales vary w/TL to J Sickles fr C Castro 12/21/2006	2133417

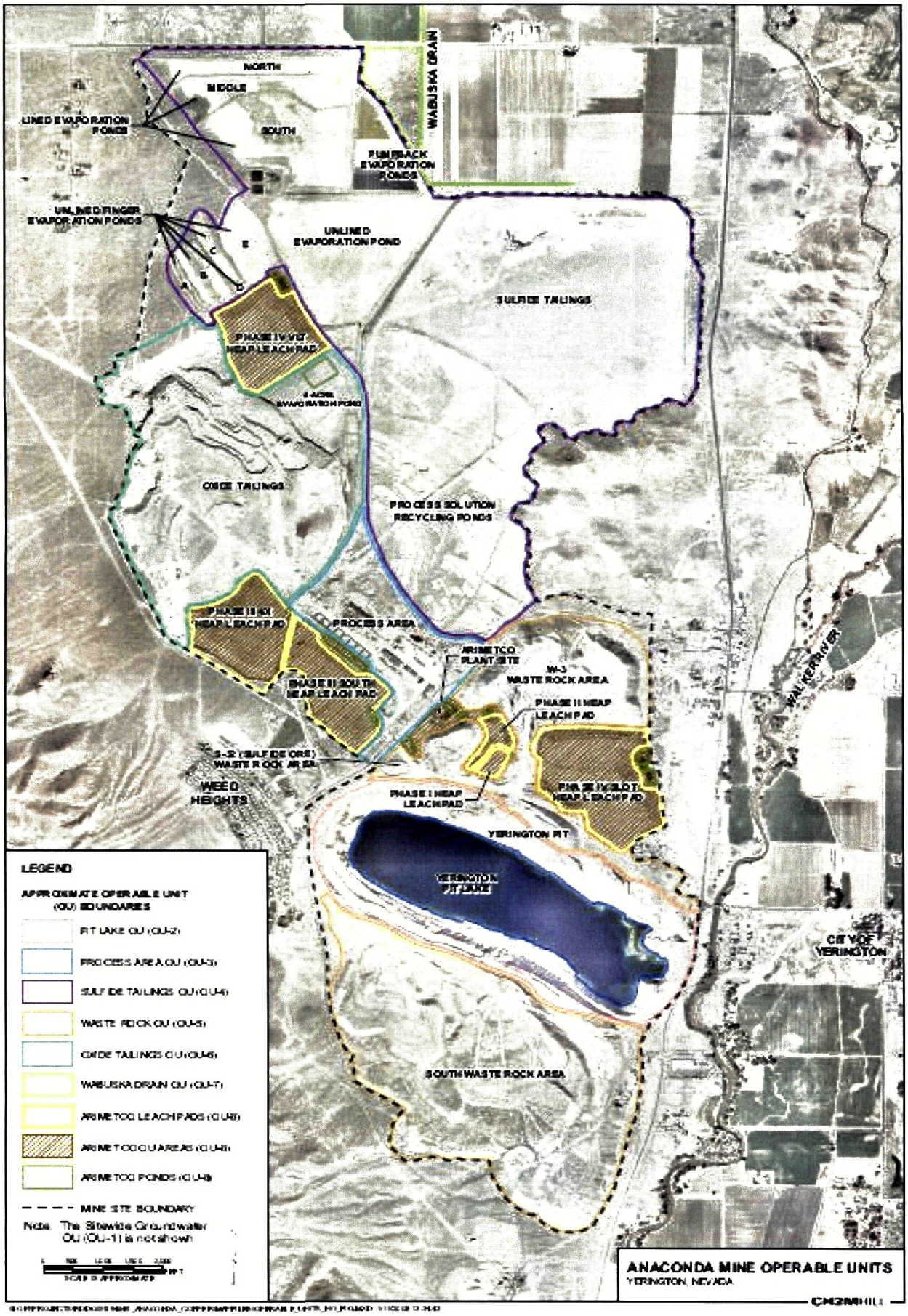
10/20/2006	Craig Tiballi / Team 9	Tom Dunkelman / Environmental Protection Agency - Region 9	Ltr: Site activity/removal rpt	2133419
12/1/2006	Robert Wallace / U R S Corp	Tom Dunkelman / Environmental Protection Agency - Region 9	Final rpt, field construction quality assurance services for pond improvement program	2133421
1/12/2007	Environmental Protection Agency - Region 9	-	Administrative order #2007-05 for RI/FS, w/attchs 1 & 2	2116773
3/20/2007	Craig Tiballi / Team 9	Tom Dunkelman / Environmental Protection Agency - Region 9	Ltr: Site activity rpt w/attchs A-C	2133422
7/6/2007	Michael Schwennesen / Team 9	Environmental Protection Agency - Region 9	Emergency response & time critical quality assurance sampling plan for soil, water & miscellaneous matrix sampling	2133416
9/28/2007	Tom Dunkelman / Environmental Protection Agency - Region 9	Keith Takata / Environmental Protection Agency - Region 9	(Privileged, FOIA ex 7) Action Memo: Request for time-critical removal action at site (enforcement confidential addendum only) (Privileged document target only)	2138931
9/28/2007	Tom Dunkelman / Environmental Protection Agency - Region 9	Keith Takata / Environmental Protection Agency - Region 9	Action Memo: Request for time-critical removal action at site, w/o enforcement confidential addendum	2133411
10/16/2007	Tom Dunkelman / Environmental Protection Agency - Region 9	-	Polrep #1	2133431
11/20/2007	Environmental Protection Agency - Region 9	-	List of US EPA guidance documents consulted during development & selection of response action for site	2139497
11/30/2007	Environmental Protection Agency - Region 9	-	Public Notice: EPA announces availability of administrative record for removal action at site	2133435
-	Environmental Protection Agency - Region 9	Atlantic Richfield Co	Fluids management system standard operating procedures	2133415
5/28/2008	Mike Schwennesen, START Team 9	Tom Dunkelman / Environmental Protection Agency	Anaconda Ponds Assessment Report	2163309

Figure 1

Site Plan

Anaconda Yerington Mine Site

August 2006


NORTH
MIDDLE
SOUTH
LINED EVAPORATION PONDS
WABUSKA DRAIN
PUMPBACK EVAPORATION PONDS
UNLINED FINGER EVAPORATION PONDS
A
B
C
D
E
UNLINED EVAPORATION POND
SULFIDE TAILINGS
PHASE IV WEST HEAP LEACH PAD
4-ACRE EVAPORATION POND
OXIDE TAILINGS
PROCESS SOLUTION RECYCLING PONDS
PHASE II EAST HEAP LEACH PAD
PROCESS AREA
ARIMETCO PLANT SITE
W-3 WASTE ROCK AREA
PHASE II SOUTH HEAP LEACH PAD
PHASE II HEAP LEACH PAD
S-2 (SULFIDE ORE) WASTE ROCK AREA
WEED HEIGHTS
PHASE I HEAP LEACH PAD
PHASE III/GOLD HEAP LEACH PAD
YERINGTON PIT
YERINGTON PIT LAKE
WALKER RIVER
CITY OF YERINGTON
SOUTH WASTE ROCK AREA
LEGEND
APPROXIMATE OPERABLE UNIT (OU) BOUNDARIES
PIT LAKE OU (OU-2)
PROCESS AREA OU (OU-3)
SULFIDE TAILINGS OU (OU-4)
WASTE ROCK OU (OU-5)
OXIDE TAILINGS OU (OU-6)
WABUSKA DRAIN OU (OU-7)
ARIMETCO LEACH PADS (OU-8)
ARIMETCO OU AREAS (OU-8)
ARIMETCO PONDS (OU-9)
MINE SITE BOUNDARY
Note: The Sitewide Groundwater OU (OU-1) is not shown.
SCALE IS APPROXIMATE
ANACONDA MINE OPERABLE UNITS
YERINGTON, NEVADA
CH2MHILL